MECHANISM ADJUSTMENTS

Pinch Roller Adjustment (Refer to Fig. 6)

Shaft of Pinch Roller must be parallel to shaft of Capstan. Proper pressure between Pinch Roller and Capstan is about 190 g (6 oz.) at 3-3/4 ips. speed and about 165 g (5 oz.) at 1-7/8 ips. speed. Pressure can be adjusted by turning Pinch Roller pressure adjustment nut to either direction.

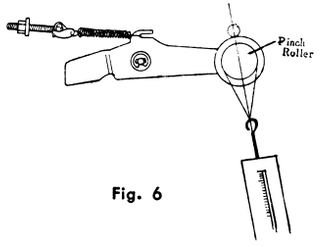


Fig. 6

Pressure Pad Adjustment (Refer to Fig. 7)

A. Pressure of pressure pads should be from 8~12 g (0.25 to 0.45 oz.)
B. If Pressure is not within above range, proceed as follows:
   a. Replace felt if worn.
   b. Replace tension spring if defective.

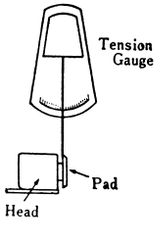


Fig. 7

Takeup and Rewind Torque Adjustments

A. Playback Torque
   a. Place 5 inch tape reel on Takeup Table and hang end of tape on Tension Gauge as shown below. Turn function lever to "PLAY".

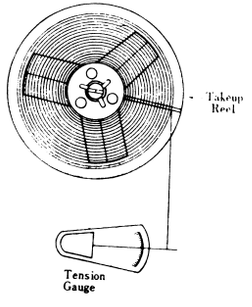


Fig. 8

   b. Tension to be between 5~9 g (0.15 and 0.35 oz.)
   c. If tension is not within above range, proceed as follows:
      i. Clean oil and dust from all drive points to eliminate slippage. Especially check coupling of rubber belt.
      ii. If rubber belt is worn out or stretched, replace with new belt.
      iii. If friction spring of Takeup Reel Table is defective, replace.
      iv. If washer in the Takeup Reel Table is worn, replace.
B. Fast Forward Torque
   a. Place 5 inch tape reel on Takeup Table and hang end. of tape on Tension Gauge as shown above. Set the recorder in F.F. mode.
   b. Tension should. be greater than 14g (0.5 oz.).
   c. If tension is less than 14g (0.5 oz.), adjust as per A-C above.
C. Rewind Torque
   a. Place 5 inch tape reel on Rewind Table and hang end of tape on a Tension Gauge. Set recorder in rewind mode.
   b. Tension should be greater than 14 g (0.5 oz.).
   c. If tension is less than 14 g (0.5 oz.), proceed as follows:
      i. Clean oil and dust from all drive points to eliminate slippage. Especially check coupling of rubber belt.
      ii. If rubber belt is worn out or stretched, replace with new belt.

Tape Speed Adjustment

A. Tape speed can be adjusted by moving Motor forward or backward in direction of arrow, after loosening (2) screws holding motor bracket to base plate.
B. If motor is moved to direction "A", speed is increased (Movement in opposite direction decreases speed).
C. To adjust tape speed, use of "timing tape" and stop watch is recommended.
D. Speed tolerance to be within ±3% for both 3-3/4 and 1-7/8 ips. Speeds.

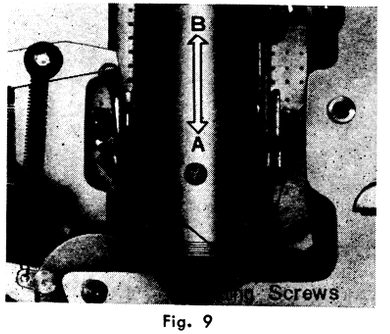


Fig. 9

AMPLIFIER ADJUSTMENTS

1. RECORD LEVEL ADJUSTMENT

Record level which indicates "O-VU" at meter is adjusted to 10db below saturation point of tape.
Instruments Required: AF Oscillator, Attenuator, VTVM, 100Ω Resistor.
Measuring Circuit Refer Fig. 10

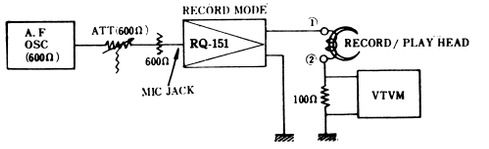


Fig. 10

Measuring Method:
1. As shown in fig. 10 connect output of AF Oscillator to Microphone Input Jack of RQ-151, through attenuator (terminate with 600Ω if impedance of attenuator is 600Ω). Disconnect wiring from terminal of head insert 100Ω resistor between lead wire and connect VTVM across resistor.
2. In order to cut off bias current from oscillator circuit, disconnect lead wire from Function Lever Switch.
3. Set recorder to RECORD mode.
4. Set AF Oscillator output for 1Kc, −50 to −60db (1V =0db); rotate volume control of recorder to obtain 4.5mV reading at VTVM.
5. Adjust VR-5 so that VU meter pointer will indicate 0-VU.

2. OVERALL FREQUENCY RESPONSE CHECK

Instruments Required: AF Oscillator, Attenuator, 8Ω Resistor, VTVM.
Measuring Circuit: Refer Fig. 11

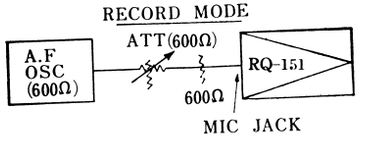


Fig. 11

Measuring Method:
1. As shown in fig. 11 connect output of AF Oscillator to Microphone Input Jack of RQ-151 through Attenuator (terminate with 600Ω if impedancn of attenuator is 600Ω).
2. Set recorder to RECORD mode with volume and tone controls at maximum positions ("10" and "SP" positions respectively).
3. Set AF Oscillator for 1,000 cps and adjust Attenuator until VU meter indicates 0-VU, continue turning Attenuator to attenuate 10db. This level will be "standard" level for Overall Frequency Response check.
4. With above setting, record signals from 400 to 4,000 cps on the RQ-151.
5. Change connections as shown in fig. 12 (be sure ot connect 8Ω dummy load resistor accross Extension Speaker Jack.
6. Playback recording, (see 4 above) set volume control so that 1V is obtained at VTVM. Without changing setting, conduct frequency response checks. Tone control should be set at "SP" position.
7. Standard ranges of frequency responses are:
   (Reference=0db at 1,000 cps)
   0db ±5db at 400 cps and +2db ±5db at 4,000 cps.
8. If the frequency response is not within the above range, conduct Head Azimuth and Record Bias Current Adjustments.

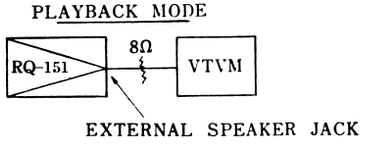


Fig. 12

3. RECORD BIAS CURRENT AND FREQUENCY ADJUSTMENTS

A. Bias Frequency Adjustment

Instruments Required Oscilloscope, AF Oscillator, 100Ω Resistor.
Measuring Circuit Refer Fig. 13

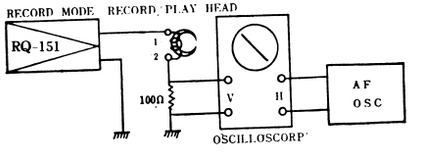


Fig. 13

Measuring Method:
1. As shown in fig. 13 insert a 100Ω resistor to ground lead wire of Record/Playback Head and connect vertical axis of Oscilloscope across resistor; connect horizontal axis of Oscilloscope to output terminal of AF Oscillator.
2. When RQ-151 is set to RECORD mode, connected as above, Lissajous' figure will appear on the Oscilloscope; refer to this figure, to check frequency of bias oscillator. Standard frequency is 35±5Kc.
3. If frequency is not within above range, adjust dust core of T4 (Bias Oscillator Coil) until above frequency is obtained.

B. Bias Current Adjustment

Instruments Required: VTVM, 100Ω Resistor.
Measuring Circuit: Refer Fig. 14

PARTS LIST

RESISTORS

Ref. No.	Dercription	PartsNo.
R 1	Carbon Film Resistor	ERD-18RZK223
R 2	〃 〃 〃	ERD-18RZK122
R 3	〃 〃 〃	ERD-18RZK120
R 4	〃 〃 〃	ERD-18RZK103
R 5	〃 〃 〃	ERD-18RZK221
R 7	〃 〃 〃	ERD-18RZK122
R 8	〃 〃 〃	ERD-18RZK333
R 9	〃 〃 〃	ERD-18RZK104
R 10	〃 〃 〃	ERD-18RZK222
R 11	〃 〃 〃	ERD-18RZK272
R 12	〃 〃 〃	ERD-18RZK122
R 13	〃 〃 〃	ERD-18RZK560
R 14	〃 〃 〃	ERD-18RZK333
R 15	〃 〃 〃	ERD-18RZK103
R 16	〃 〃 〃	ERD-18RZK331
R 17	〃 〃 〃	ERD-18RZK100
R 18	〃 〃 〃	ERD-18RZK271
R 19	〃 〃 〃	ERD-18RZK821
R 20	〃 〃 〃	ERD-18RZK101
R 21	〃 〃 〃	ELR1/4 2.2Ω
R 22	〃 〃 〃	ERD-18RZK104
R 23	〃 〃 〃	ERD-18RZK473
R 24	〃 〃 〃	ERD-18RZK104
R 25	〃 〃 〃	ERD-19RZK682
R 26	〃 〃 〃	ERD-18RZK470
R 27	〃 〃 〃	ELR1/4 1kΩ
R 28	〃 〃 〃	ERD-14LZK100
R 29	〃 〃 〃	ERD-18RNY503
R 30	Solid Resistor	200Ω
R 31	Carbon Film Resistor	ERD-18RZK274

VARIABLE RESISTORS

VR 1	Variable Resistor	EVJ-25BT12A14
VR 2	〃 〃	EVJ-A0AT12A14
VR 3	Semi-fixed Variable Resistor	2kΩ
VR 4	〃 〃 〃	1kΩ
VR 5	〃 〃 〃	2kΩ

CAPACITORS

C 1	Electrolytic Capacitor	ECE-A10V50
C 2	〃 〃	ECE-A10V1
C 3	Mylar Capacitor	820pF MV
C 4	Electrolytic Capacitor	ECE-A6V30
C 5	Mylar Capacitor	0.1μ MV
C 6	〃 〃	0.05μF MV
C 7	Electrolytic Capacitor	ECE-A10V10
C 8	〃 〃	ECE-A6V30
C 9	〃 〃	ECE-A10V0.5
C 10	〃 〃	ECE-A10V10
C 11	〃 〃	ECE-A6V50
C 12	〃 〃	ECE-A10V50
C 13	Mylar Capacitor	0.01μF JV
C 14	〃 〃	0.01μF JV
C 15	〃 〃	0.001μF MV
C 16	〃 〃	0.001μF MV
C 17	〃 〃	0.02μF JV
C 18	Mylar Capacitor	0.005μF JV
C 19	Electrolytic Capacitor	ECE-A10V10
C 20	〃 〃	ECE-A6V30
C 21	〃 〃	12V200μF RB
C 22	〃 〃	12V200μF RB
C 23	〃 〃	ECE-B15V10

ELECTRICAL PARTS

E 268	Printed Circuit Board-A	QJI0038
E 270	〃 〃 〃 -C	QJI0039
E 271	Heat Sink for Transistor	QTH1012
E 272	Record/Playback Head	MH-28(QWY-0005)
E 273	Erase Head	EH-27(QWY-0206)
E 276	V.U Meter	QSL-0013
E 277	Speaker	EAS-9P52S
E 279	Mic/Remote Jack	QJA-0208
E 280	AC Adaptor Jack	QJA-0209
E 281	EXT.SP.Jack	QJA-0210

TRANSISTORS

TR 1	Transistor	2SB-173
TR 2	〃	2SB-175
TR 3	〃	2SB-175
TR 4	〃	2SB-178
TR 5	〃	2SB-178
TR 6	〃	2SB-172
D 1	Germanium Diode	0A-70
D 2	Thermistor	TD-6-A050
T 1	Input Transformer	QLA0112
T 2	Ouput Transformer	QLA0312
T 3	AF Transformer	QLA0321
T 4	Oscillator Transformer	QLB0114
S 1	Lever Switch	QSR-C274
S 5	Leaf Switch for Remote Control Circuit	QSB0131

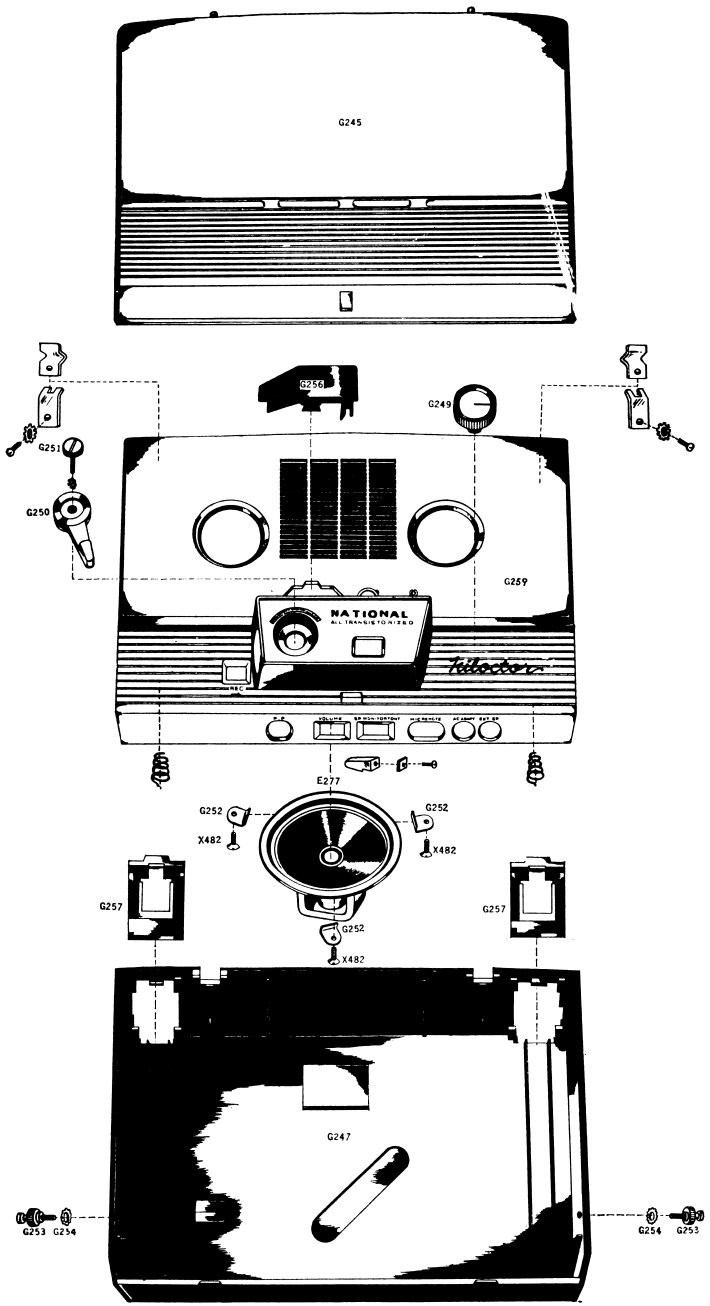
MECHANICAL PARTS

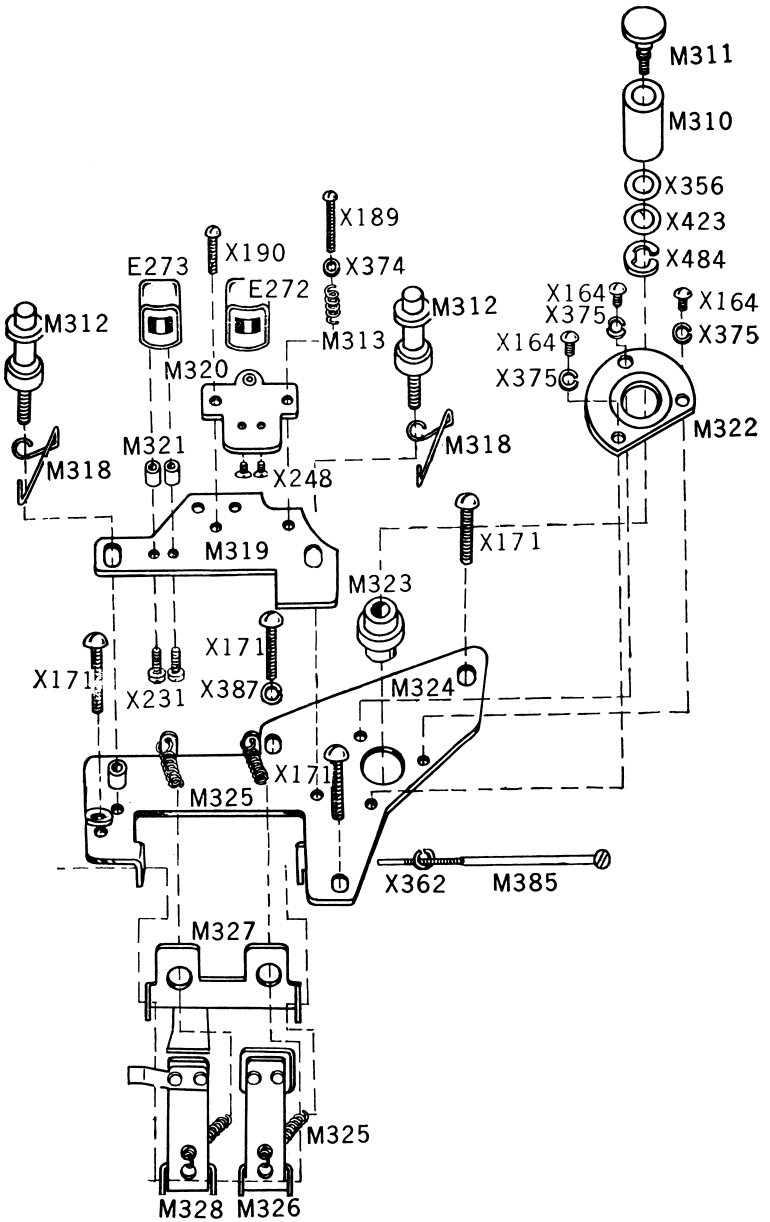
M 310	Capstan	QMS1032
M 311	Capstan Holding Screw	QHQ1032
M 312	Tape Guide	QAG1011
M 313	Head Adjustment Spring	QBC1026
M 318	Tape Guide Spring	QAG1030
M 319	Head Plate	QMK1021
M 320	Record/Playback Head Mounting Plate	QMK1022
M 321	Erase Head Spacer	QTW1013
M 322	Flywheel Bearing Supporting Base	QMK1020
M 323	Flywheel Shaft Metal	QMM1049
M 324	Upper Baseplate Assembly	QXK1007
M 325	Tape Pad Spring	QAP1048
M 326	Tape Pad for R/P Head	
M 327	Tape Pad Metal	QAP1049
M 328	Tape Pad for Erase Head and Sensing Pole	QXV0004
M 331	Reel Table Table Screw	QHQ1033
M 333	Supply Reel Table	QXP0063
M 334	Supply Reel Brake	QXA0011
M 336	Rewind Pulley	QDP1045
M 337	Cushion Rubber for V.U Meter	QBG1039
M 338	Cushion Rubber Holder	QMH1024
M 345	Sub-Baseplate-B	QMK1019
M 347	Fast Forward Lever Spring	QBT1059
M 348	Record Button	QXB0025
M 349	Record Button Lever-A	
M 350	Record Button Lever Spring	QBT1063
M 352	Fast Forward Lever	QML1093
M 354	Record Button Lever-B	QML1094
M 355	Record Button Lever Spring	QBS1004
M 356	Catch Lever Shaft	QMS1081
M 357A	Catch Lever Assembly	QXL0017
M 358A	Fast Forward Lock Lever	QXL0019
M 359	Catch Lever Spring	QBT1055
M 360	Fast Forward Lock Lever Spring	QBT1059
M 361	Spring Spacer	QBP1030
M 362A	Clutch Lever	QXL0026
M 364A	Cam Plate	QXH0004
M 366	Fast Forward Look Lever Lifter	QMR1026
M 368	Main Pulley Shaft Guide	QMQ1015
M 369	Flywheel	QDW1006
M 370	Main Pulley Shaft Retainer	QYQ0003
M 371	Spacer for Main Pulley Shaft Retainer	
M 376A	Lower Baseplate	QXK1008
M 380	Motor Holder	QMH1023
M 381	Motor Pivot	QBJI058
M 382	Motor Clutch Arm	QML1095
M 383	Cam Plate Screw	QHP840X11B3
M 384	Motor Lifter	QML1100
M 385	Pressure Pad Arm Shaft	QMS1082
M 386A	Rewind Lever Assembly	QXL0021
M 387	Thrust Ball	QDK1002
M 388	Main Pulley	QXP0065
M 389	Main Pulley Set Screw	
M 392	Hook for Motor Spring	QBK1019
M 393	Motor Spring	QBT1056
M 394	Motor Shielding Cover	QTS1039
M 395	Motor	
M 396	Main Baseplate	QXK1009
M 398A	Takeup Reel Table Brake	QXA0012
M 399	Supply Reel Table Brake Spring	QGT1061
M 401	Supply Reel Table Brake Lifter	QBI1002
M 402	Takeup Reel Table Friction Spring	
M 403	Takeup Rubber Belt	QDB0024
M 404	Rewind Rubber Belt	QDB0025
M 407A	Brake Control Lifter	QYQ0004
M 408	Brake Control Spring	QBT1061
M 410	Rewind Brake Lifter	
M 411A	Pinch Roller Lever	QXL0022
M 412	Pinch Roller Lever Spring	QBT1062
M 413	Takeup Lever Spring	QBN1007
M 414A	Takeup Lever	QXL0008
M 415	Pinch Roller Screw	QHQ1031
M 416	Pinch Roller	QDP1046
M 418	Takeup Reel Pulley	QDP1043
M 419	Takeup Reel Washer	QWQ1045
M 420A	Takeup Reel Table	QXP0064
M 422	Takeup Guide Arm	QXA0013
M 423	Fast Forward Roller	QDP1047
M 425	Guide Pulley	QDP1048
M 428	Control Board	QMF1049
M 429	Volume Control Knob	QGT1036
M 430	Tone Control Knob	QGT2016
M 431	Control Board Spacer-A	QTW1014
M 432	Control Board Spacer-B	QTW1015
M 433	Rewind Lever Spring	QBT1057
M 434	Clutch Lever Spring	QBT1058
M 435	Spring Joint	QMQ1016
M 438	Pin for F.F. Roller and Rewind Pulley	
M 440	Bushing for Motor Lifter	QMM1057
M 444	Supply Reel Table Brake Spring	
M 445	Takeup Reel Table Brake Spring	

CABINET PARTS

G 245	Top Cover Assembly	QYA0019
G 259	Main Case Assembly	QYB0048
G 247	Bottom Cover Assembly	QYC0032
G 250	Function Control Lever	QGT2017
G 251	Function Control Lever Screw	QHQ1035
G 252	Speaker Holder	QKT1099
G 253	Strap Holder	QKT1094
G 254	Washer for Strap Holder	
G 256	Head Cover	QGH1019
G 257	Dry Cells Comparment Cover	QKD1024
X 160	Screw, Round-head, M, 2×4	
X 163	〃 〃 〃 〃 2.6×3	
X 164	〃 〃 〃 〃 2.6×4	
X 165	〃 〃 〃 〃 2.6×5	
X 170	〃 〃 〃 〃 3×4	
X 171	〃 〃 〃 〃 3×10	
X 174	〃 〃 〃 〃 3×10	
X 179	〃 〃 〃 〃 3×20	
X 180	〃 〃 〃 〃 3×80	
X 189	〃 〃 〃 〃 2×12	
X 190	〃 〃 〃 〃 2×6	
X 191	〃 〃 〃 〃 2×45	
X 192A	〃 〃 〃 〃 3×9.5	
X 231	〃 Countersink, S, 1.7×6	
X 248	〃 〃 〃 1.6×2	
X 249	〃 〃 〃 3×18	
X 356	Phenolic Washer, 4×8×0.25	
X 357	〃 〃 4×8×0.5	
X 358	〃 〃 3×7.5×0.5	
X 358	〃 〃 3×8×0.5	
X 359	〃 〃 3×8×0.5	
X 362	Spring Washer, 2φ	
X 363	〃 〃 2.6φ	
X 364	〃 〃 3φ	
X 372	Flat Washer, 3φ	
X 374	〃 〃 2φ	
X 375	〃 〃 2.6φ	
X 379	Lock Washer, 3φ	
X 380	〃 〃 3φ	
X 384	Spring Washer. 3φ	
X 387	〃 〃 4φ	
X 392	Hexagonal Nut, 2φ	
X 394	〃 〃 3φ	
X 395	〃 〃 4φ	
X 396	〃 〃 8φ	
X 398	〃 〃 6φ	
X 403	Flat Screw, K, 2.6×3	
X 422	Plastic Washer, 4×8×0.15	
X 423	〃 〃 5×10×0.15	
X 424	〃 〃 3.7×7×0.15	
X 425	〃 〃 4×12×0.15	

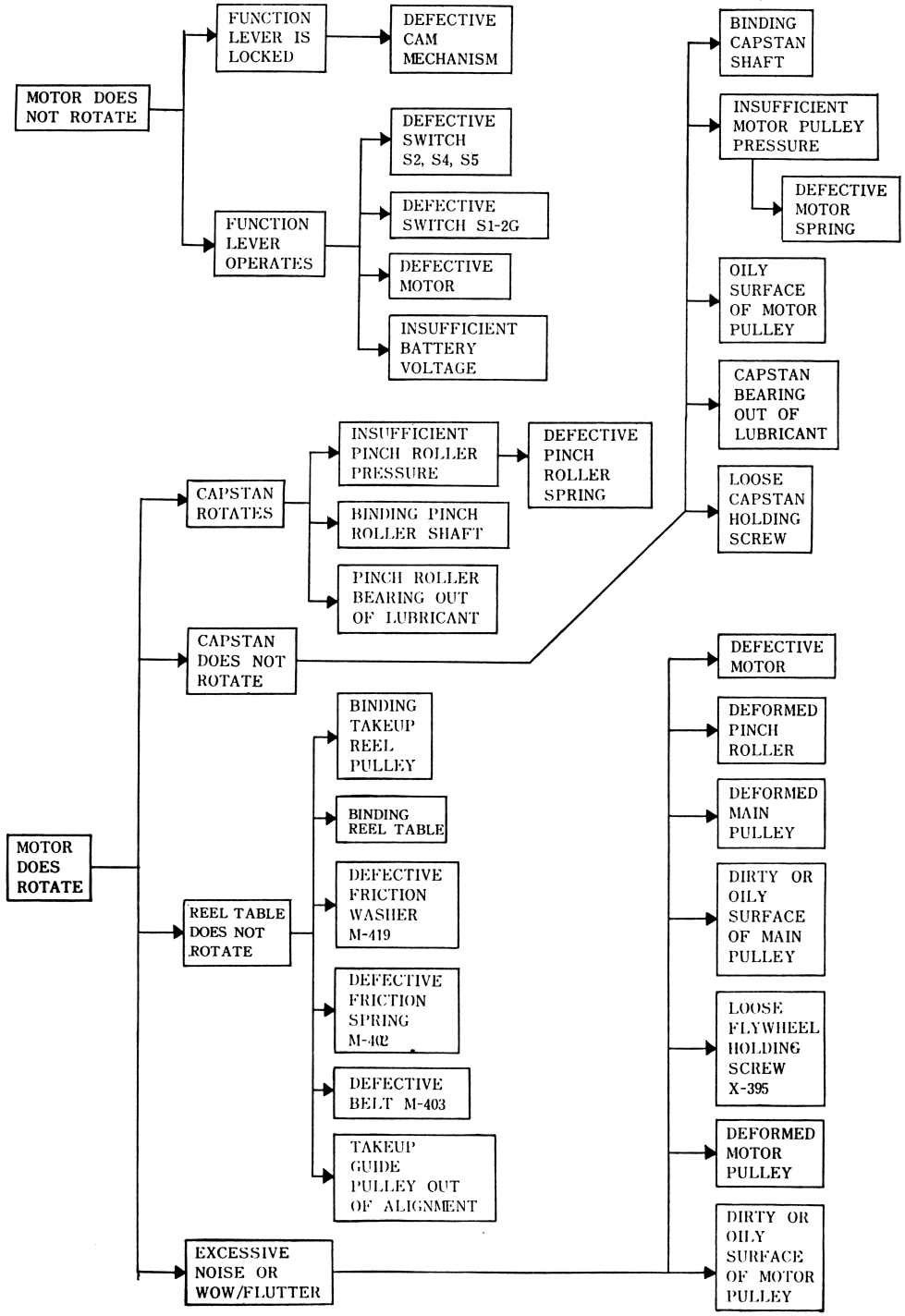
NATIONAL MODEL RQ-151





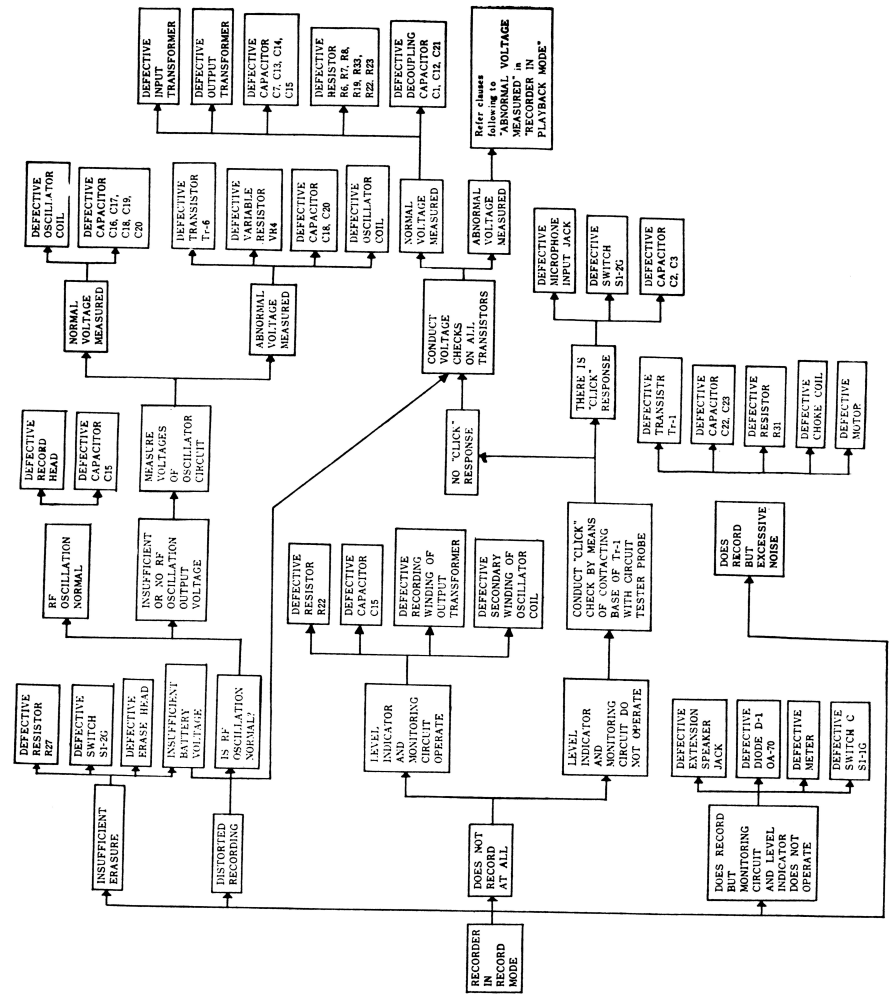
TROUBLE SHOOTERS' GUIDE

1. MALFUNCTIONS IN PLAY/RECORD MOTION: (Selector Knob Set at MANUA)

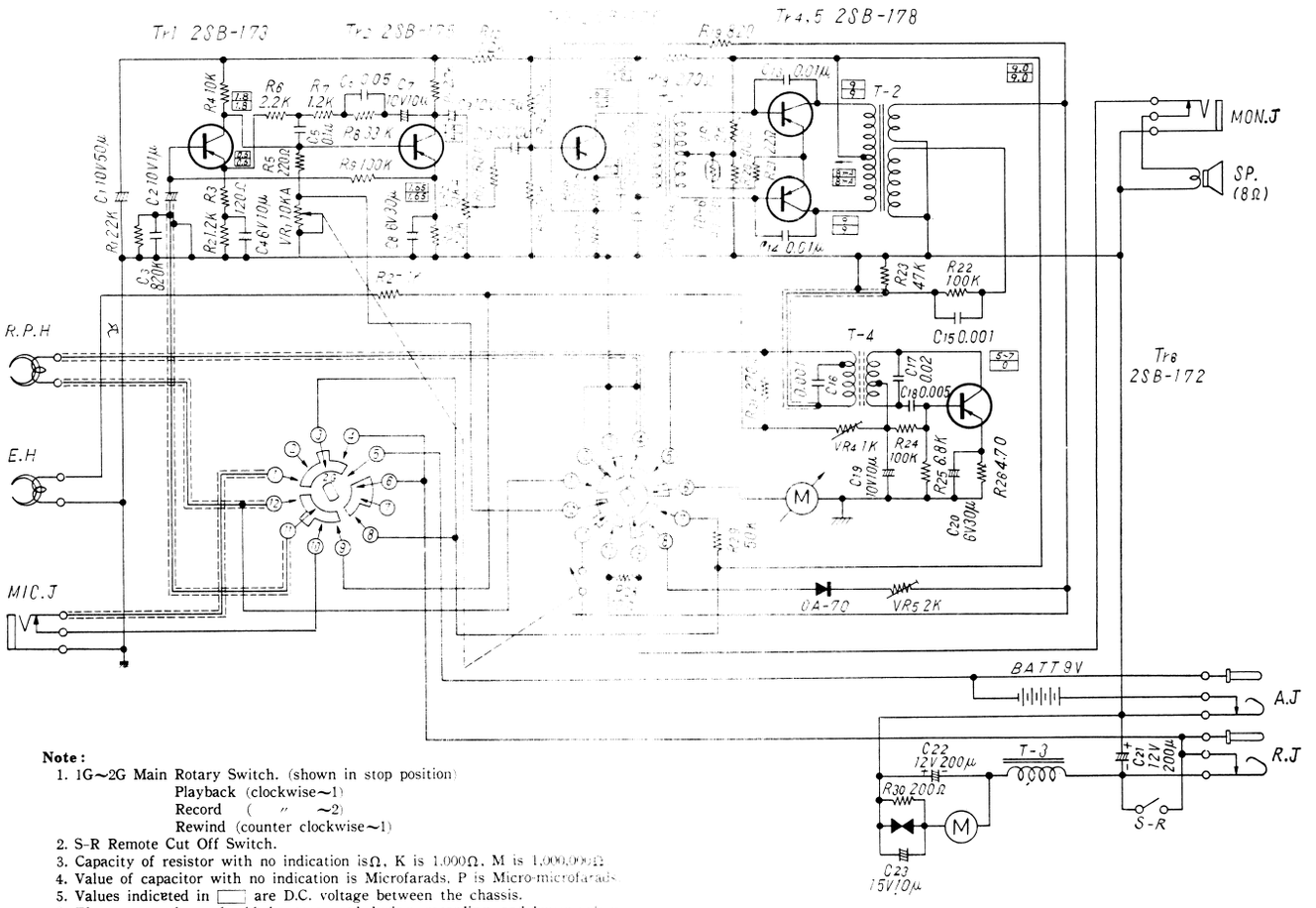


TROUBLE SHOOTERS' GUIDE

2. DEFECTIVE RECORDING CIRCUIT: (Selector Knob set at MANUAL)

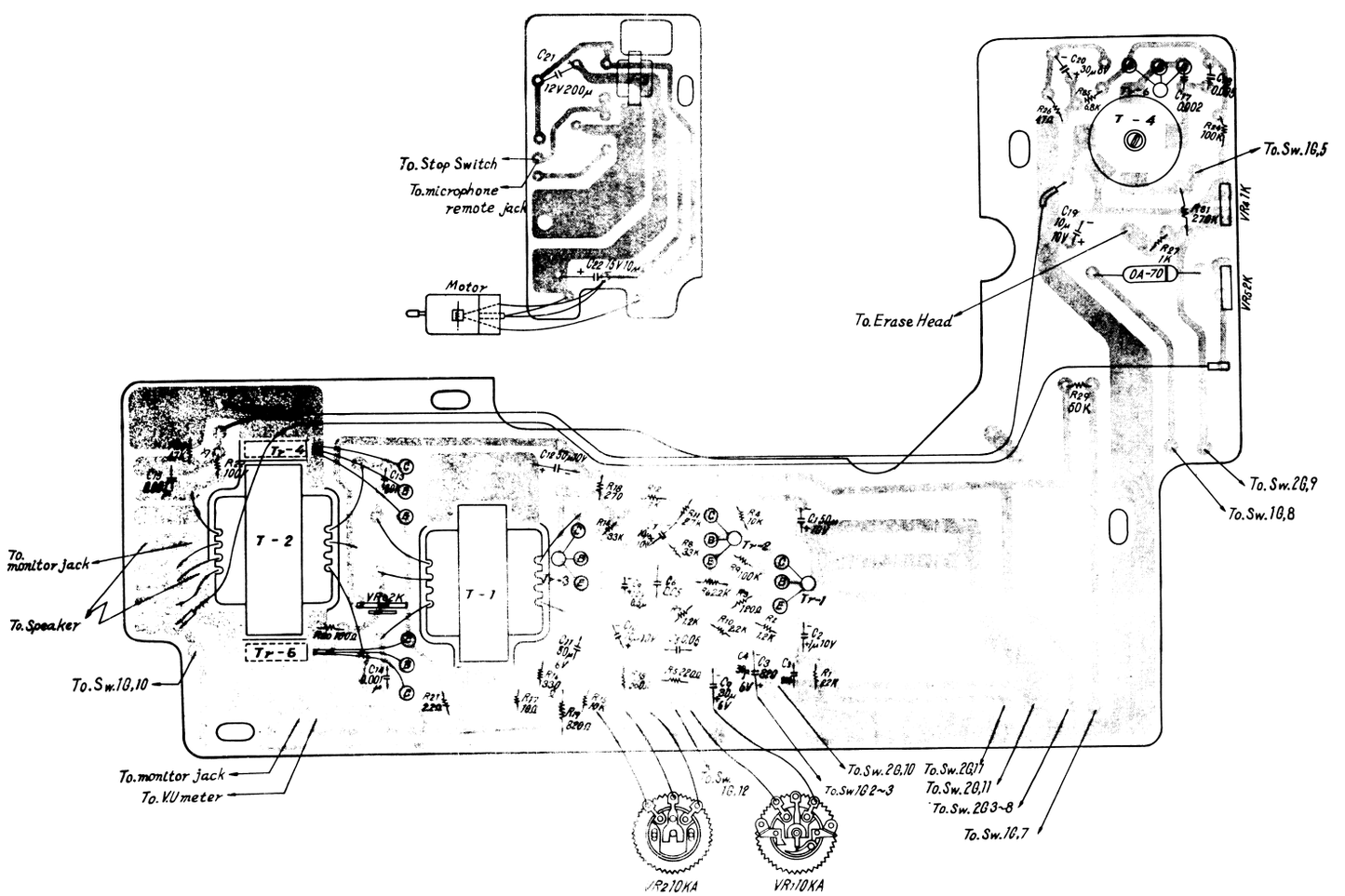


SCHEMATIC DIAGRAM



Note:

1. 1G~2G Main Rotary Switch. (shown in stop position)
   Playback (clockwise~1)
   Record (" ~2)
   Rewind (counter clockwise~1)
2. S-R Remote Cut Off Switch.
3. Capacity of resistor with no indication isΩ, K is 1,000Ω, M is 1,000,000Ω
4. Value of capacitor with no indication is Microfarads, P is Micro-microfarads
5. Values indicated in ▭ are D.C. voltage between the chassis.
6. The upper values should be measured during recording and lower values during playback.

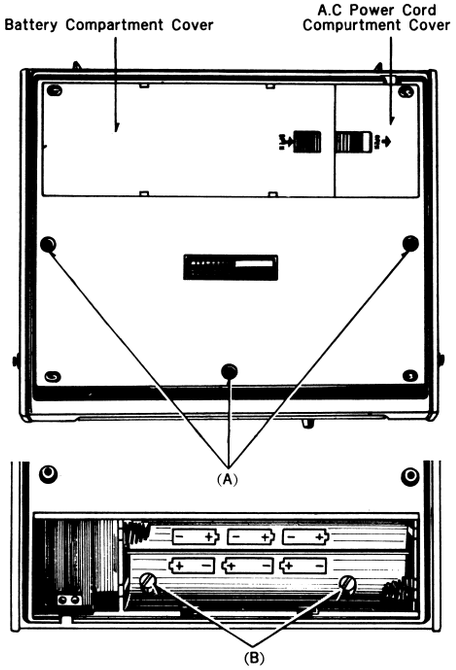


NATIONAL MODEL RQ-151

N9-9.

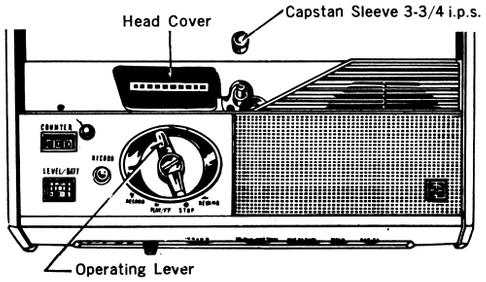
DISASSEMBLY INSTRUCTIONS

BOTTOM COVER

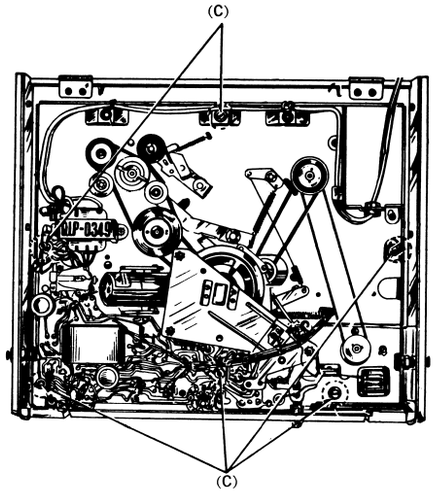


1. Turn the set upside down.
2. Undo the fixing screws 3 pcs. (A) of the Bottom Cover and the fixing screws 2 pcs. (B) inside of the Battery Case.
3. If it is lifted from the hinge side, the Bottom Cover can be removed.
   Note: Attention must be paid to lead wire from Battery.

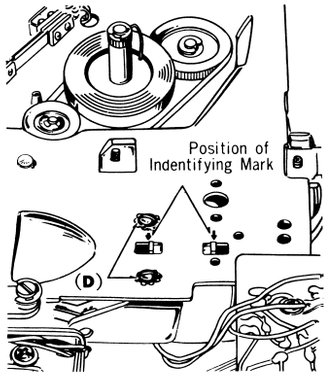
MAIN CABINET BODY CASE



1. Remove the operating Lever and the capstan sleeve 3-3/4 i.p.s.
2. Remove the Bottom Cover.
3. Undo chassis fixing screws 6 pcs. (C).
4. Hold the Flywheel of chassis, and pull it up slopewise from Reel Table side.
   Note: Attention must be paid to lead wire from speaker.



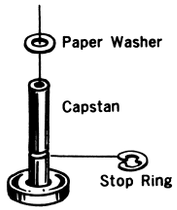
MOTOR

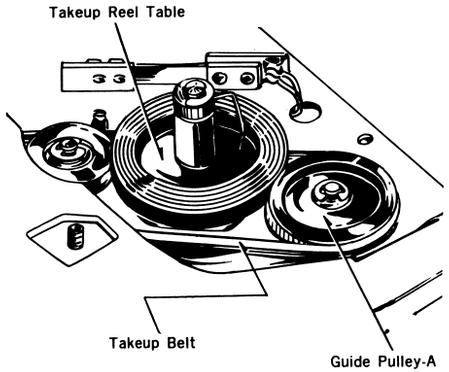


1. Remove the Motor Spring from the Motor.
2. Remove the 3 Motor Lead wires (Yellow, Red and Blue.)
3. Remove 2 screws (D) holding Motor Holder.
4. In doing so mark the original position of the Holder first.
   When replacing the Motor, fit it to the position marked When removing the old Motor, then test the tape speed.

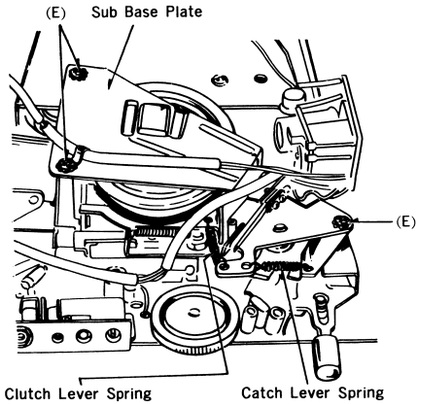
FLYWHEEL

1. Remove Paper Washer and Stop Ring on the Flywheel Shaft(Capstan).



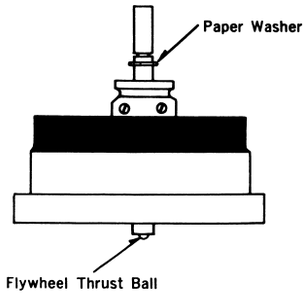


2. Remove the Rubber Belt from the Guide Pulley-A.



3. Remove the Catch Lever Spring and the Clutch Lever Spring.
4. Remove the 3 screws (E) holding the Sub Base Plate.
5. Remove the Sub Base Plate.
6. Pull the Flywheel upward.

When replacing the Flywheel, always install new Flywheel.
Thrust Ball and Paper Washers on the Flywheel Shaft



MECHANICAL OPERATING CONTROLS

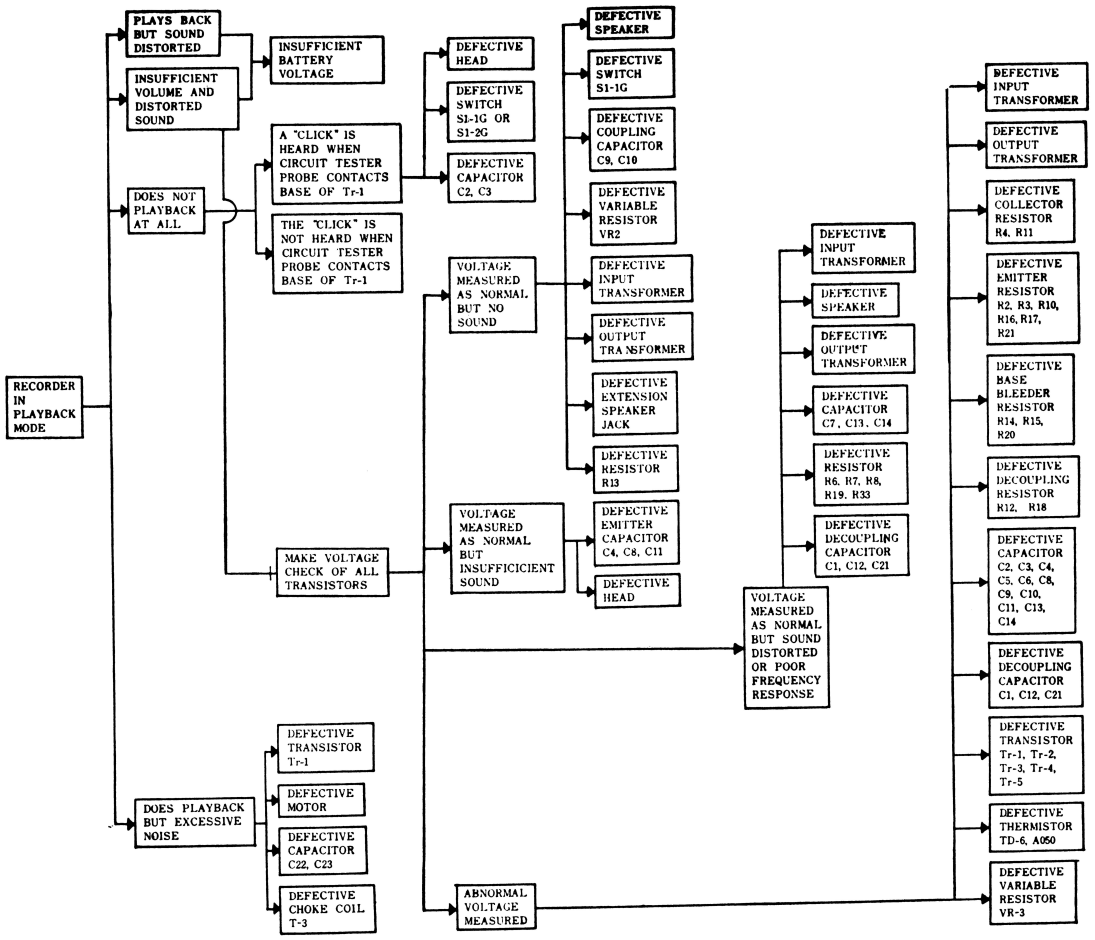
SINGLE LEVER CONTROL

All electrical and mechanical functions are performed by the single, 4 position Operating Lever. The batteries are disconnected in the STOP position.

1. Turning the Operating Lever counter-clockwise to the PLAYBACK position switches the Amplifier ON and actuates the tape transport mechanism to properly Playback a recorded tape.
2. Turning the Operating Lever counter-clockwise to the REWIND position switches the Amplifier OFF and actuates the mechanism to cause transport of the tape onto the supply reel.
3. Pressing the Record/Lock Button and turning the Operating Lever to RECORD actuates the tape transport mechanism and switches the electrical circuits, to enable the signal from crophone to be recorded. Record/Lock Button is fety locking device to prevent accidental eras
4. Volume Control is used to adjust the recording level and volume of the reproduced sound. It is not connected to the Power Switch.
5. V.U Meter/Battery Voltmeter functions as a dual purpose meter. With the Operating Lever in the RECORD position, the meter functions as a V.U Meter and indicates the recording level. In the PLAYBACK position, the meter functions as a Voltmeter and measures the Voltage output of the batteries.
6. The Model RQ-152S is equipped with a self-contained AC power supply and a unique relay circuit which allows automatic switching from AC to Battery power and vica-versa.
   S4 is the AC to Battery switch contacts and normally is in the Battery position. When AC power is applied, S4 contacts are switched to the AC position by the Relay.

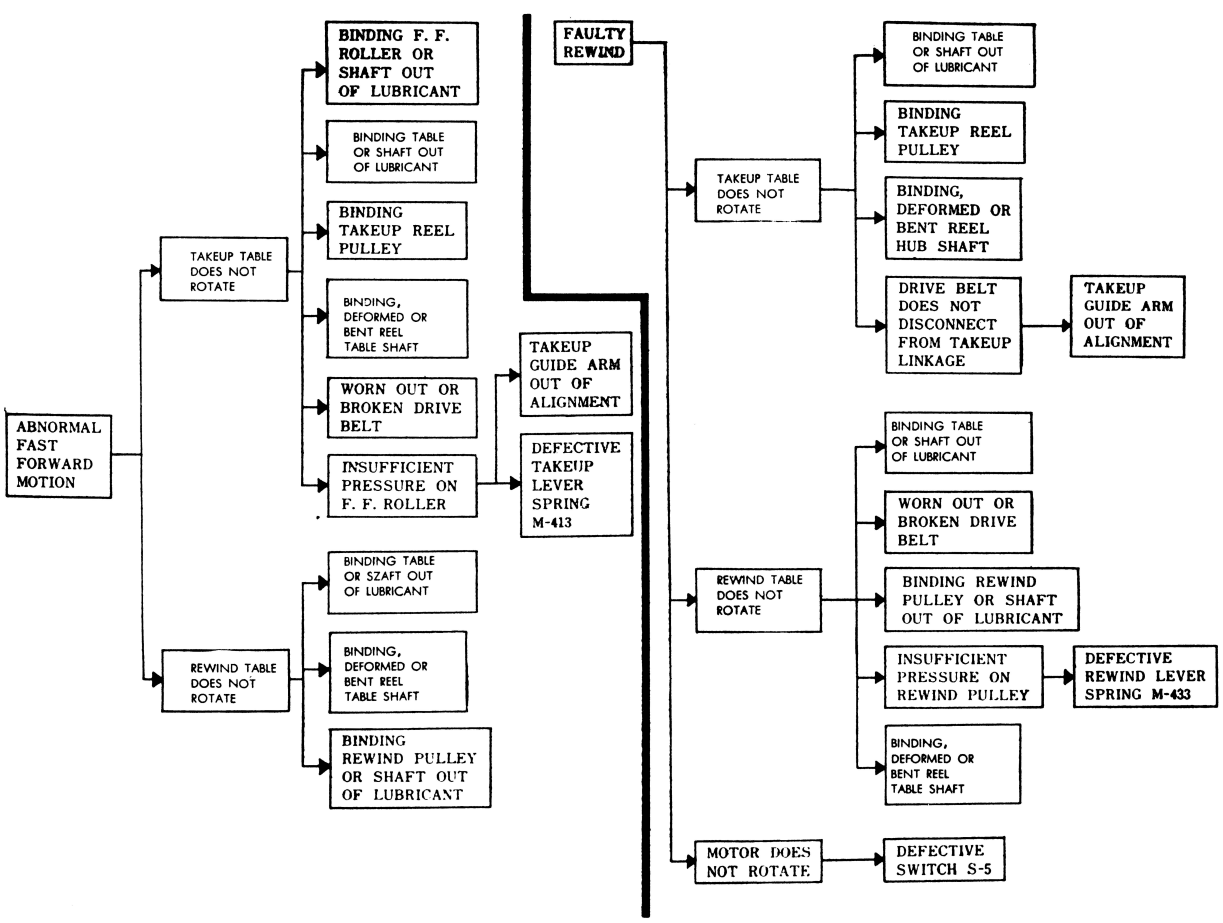
TROUBLE SHOOTERS' GUIDE

3. DEFECTIVE PLAYBACK CIRCUIT : (Selector Knob Set at MANUAL)

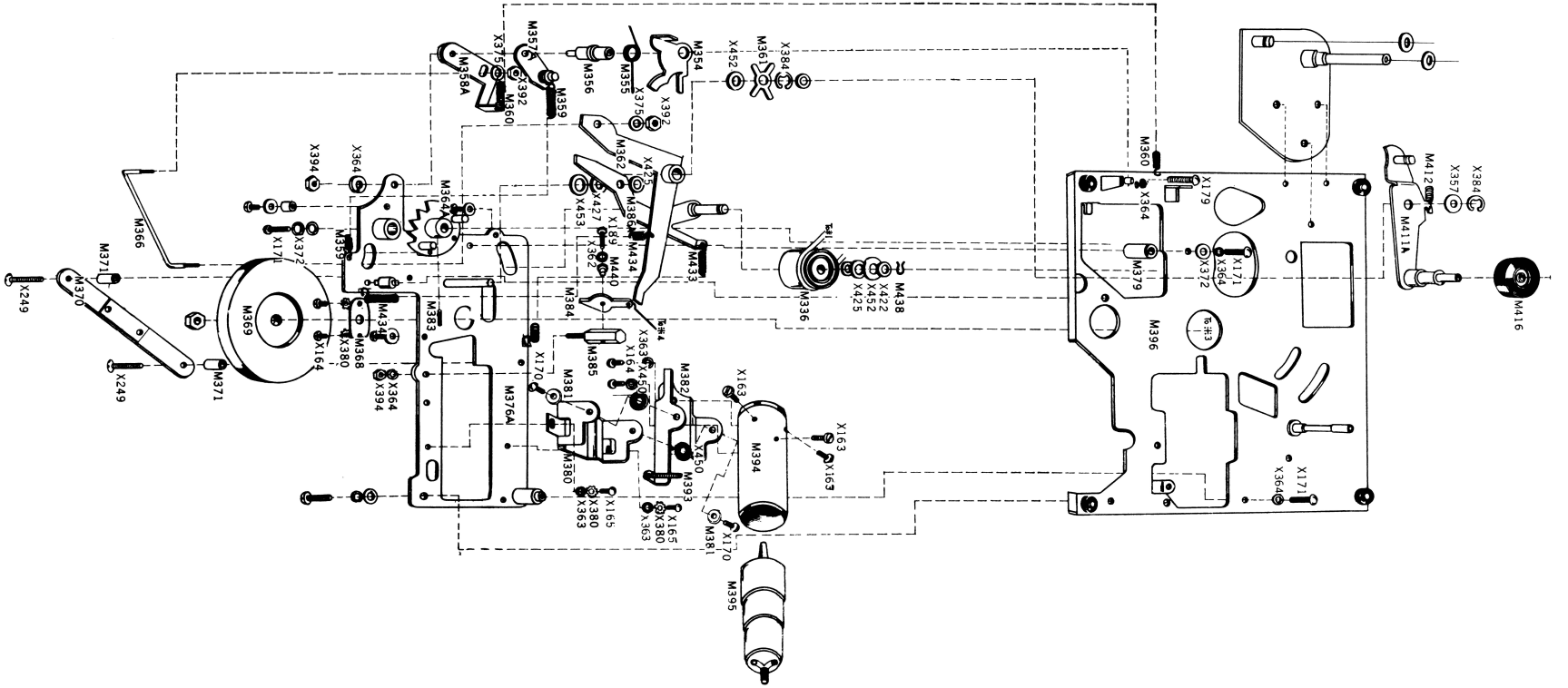


TROUBLE SHOOTERS' GUIDE

4. MALFUNCTIONS IN FAST FORWARD/REWIND MOTION :



N9-6. NATIONAL MODEL RQ-151

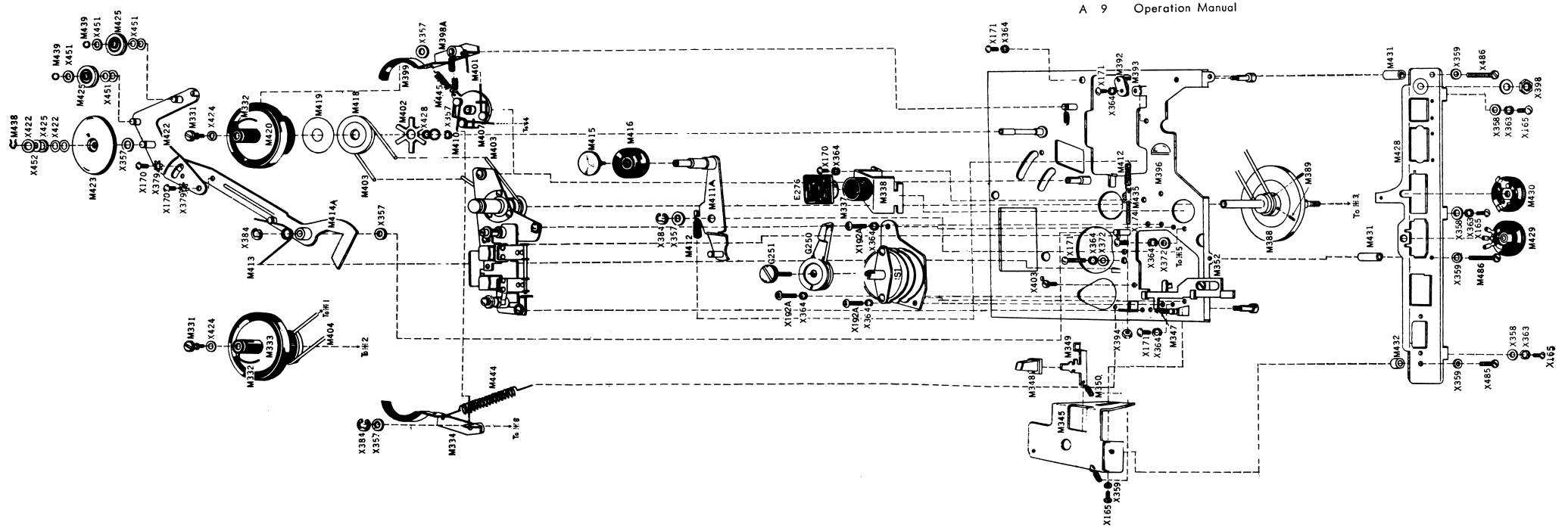


N9-4. NATIONAL MODEL RQ-151

X 427	〃 〃	6×12×0.15
X 428	〃 〃	6×8×0.15
X 450	Paper Washer,	6×12×0.3
X 451	〃 〃	3.7×7×0.25
X 452	Steel Washer,	4×12×0.3
X 453	〃 〃	6×12×0.3
X 482	Taping Screw,	2.6×5
X 485	Flathead Screw,	3×8
X 486	〃 〃	3×15

Accessories

A 1	Microphone	WM2002N
A 2	5″ Recording Tape	RT-5
A 3	5″ Empty Reel	RP-5
A 4	Recording Patch Cord	
A 5	Splicing Tape	
A 6	Handle Strap	
A 7	Accessory Bag	
A 8	Magnetic Earphone	
A 9	Operation Manual	



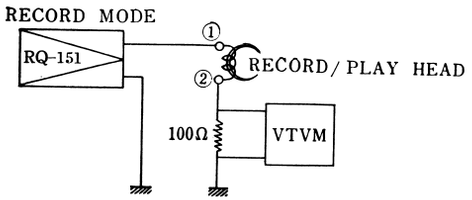


Fig. 14

Measuring Method :

1. As shown in fig. 14 insert 100Ω resistor to ground lead wire of Record/Playback Head and connect VTVM across resistor.
2. When recorder is set to RECORD mode with volume control set at minimum, BIAS (to be fed to Record/Playback Head) will be indicated at VTVM.
3. As standard bias current for model RQ-151 is set at 0.8mA, VTVM reading should be 80mV (100Ω × 0.8mA). If out of range, adjust VR-4.

Note When bias current is decreased, high-end frequency response will be improved but distortion will increase. When bias current is increased, although distortion is reduced frequency response charactristics will decrease.
Therefore the bias current may be adjusted between 0.5 and 1mA (the indication on the VTVM should be between 50 and 100mV).

RECORD PLAYBACK HEAD AZIMUTH ADJUSTMENT

Instruments Required : VTVM, 8Ω Resistor.
Measuring Circuit : Refer Fig. 12
Measuring Method :

1. As shown in fig. 12 connect VTVM to Extension Speaker Jack of model RQ-151 and terminate with 8Ω resistor (2W).
2. Thread Standard Alignment tape (azumith adjustment) and set recorder to PLAYBACK mode. Set tone control to "SP", position and volume control between "5" and "10" positions (provided it will not cause "saturation").
3. Turn head adjustment screw for maximum reading at VTVM.
4. After completion of above adjustment, lock screw with paint.
5. Adjust levels of heads (in relation to Erase Head) as in diagram below. For quick check, lift pressure pad assemblies with fingers and note position of tape in relation to heads fig. 15

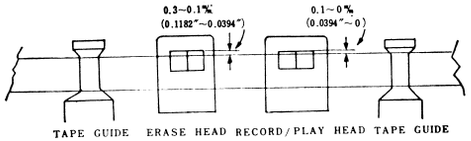


Fig. 15

ERASE CURRENT ADJUSTMENT

Instruments Required : DC Milliammeter (having range of 0~15mA)
Measuring Circuit Refer fig. 16

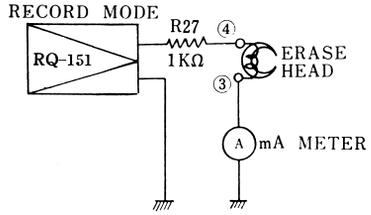


Fig. 16

Measuring Method :

1. Disconnect wiring from terminal of head and insert DC Milliammeter between wire and terminal as shown in fig.
2. When recorder is set at RECORD mode, DC Milliammeter will indicate erase current.
3. Standard erase current is between 4 and 8mA. If current measured is not within above range, replace R27 (1KΩ) resistor. If current is not within above range by wide margin after replacement of above R27 resistor and Power Source side voltage of R27 is measured as normal (−9V DC), replace Erase Head.
4. During adjustment, attention must be paid to the following points :
   a. DC milliammeter must be accurate. If "DC Current Range" of regular "VOM" is used, it should be calibrated for accurate reading.
   b. Record/Playback and erase heads are connected to assure correct phaze relationships. Do not reverse connections to any of the heads, as this will result in an increase in level variation and distortion.

POWER AMPLIFIER BIAS ADJUSTMENT

Instruments Required : DC Milliammeter having range of 0-50mA.

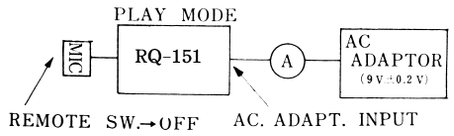


Fig. 17

Measuring Circuit Refer fig. 17

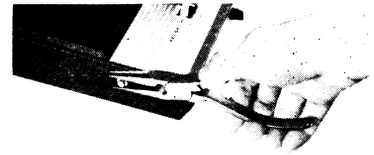
Measuring Method :

1. As shown in fig. 17 connect AC Adaptor to recorder through a DC Milliammeter and set adaptor output to 9V ±0.2V.
2. Connect microphone to microphone input jack with REMOTE CONTROL SWITCH at the microphone set at "OFF".

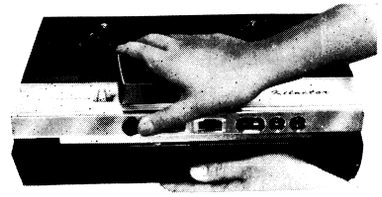
DISASSEMBLY INSTRUCTIONS

1. To remove Bottom Cover

1. Remove carrying handle, unscrew and remove handle hooks located at sides of recorder. In this instance, care must be taken to avoid scratching recorder cabinet.

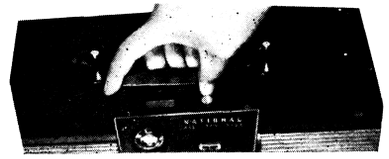


2. Remove screws holding bottom cover and gently disengage cover from recorder body.

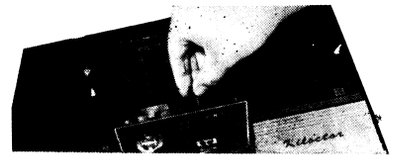


2. To Remove Top Panel

1. Remove head cover by pulling up at both ends.

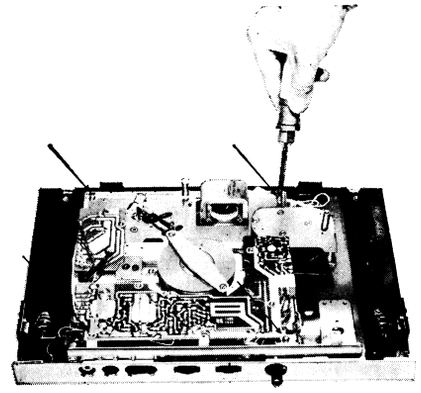


2. Pull out 3-3/4 ips Capstan sleeve from Capstan (if tape speed is set at 3-3/4 ips.)



3. Unscrew and remove lange screw holding Function Lever.

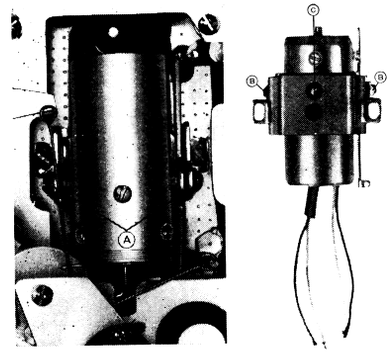
4. Place recorder upside-down and remove (4) screws holding panel to base.



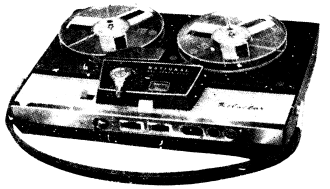
6. Turn Function Lever to "Play" and push in F.F. button; gently lift rear side of panel, so that cover can be removed from base.

3. To Remove Motor

1. Unsolder wires from circuit Board-C to motor.
2. Remove (2) screws (A) holding motor and bracket to base. (remove motor and bracket together.)
3. Remomve screws (B) and screw (C), to disengage bracket from motor.



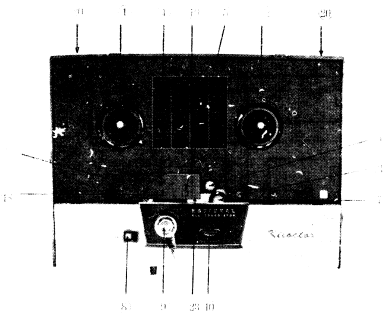
NATIONAL MODEL RQ-151

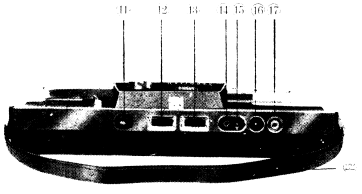


SPECIFICATIONS

Power Source:	6 dry cells (UM-1) 9 volts
Output:	300mW (700mW maximum)
Transistors:	2SB-173 (1) 2SB-175 (2) 2SB-138 (2) 2SB-172 (1)
Thermistor:	TD 6-A050 (1)
Diode:	0A-70 (1)
Recording System:	AC Bias 55KC
Erasing System:	DC Erasure
Tape Speeds:	3 3/4 ips. (9.5cm/sec) and 1 7/8 ips. (4.75cm/sec)
Recording Playback Time:	1 1/2 hours at 3 3/4 ips. with 900ft tape. 3 hours at 1-7/8 ips. with 900ft tape.
Frequency Response:	100-7,000 c/s at 3-3/4 ips. 100-4,000 c/s at 1 7/8 ips.
Recording Level Indicator:	V.U. Meter
Input Impedance:	Microphone 20K ohm (1)
Output Impedance:	External Speaker 8 ohm (1)
Rewinding Time:	Less than 4 min. with 5" reel
Fast Forward Time:	Less than 8 min. with 5" reel
Life Time of Dry Cells:	about 45 hours in continuous use.
Speaker:	3 1/2 inches PM Dynamic Microphone
Dimensions:	3 1/8×9×12 1/8 (inches)
Weight:	5.9 lb lbs.

PARTS LOCATION





1. Rewind Reel Table
2. Takeup Reel Table
3. Head Cover
4. Erase Head
5. Record Playback Head
6. Capstan Sleeve
7. Pinch Roller
8. Function Lever
9. Function Lever
10. Level Indicator
11. Fast Forward Button
12. Volume Control Knob
13. Tone Control Knob and Power Master Switch
14. Microphone Input Jack
15. Remote Control Jack
16. AC Adaptor Jack
17. Extension Speaker Jack
18. Handle Hook
19. Speaker
20. Battery Case
21. Capstan Sleeve Rest
22. Handle
23. Tape Guide

TAPE TRANSPORT OPERATION

Playback and Rewind (Refer to Fig. 2)

When Function Lever is set to "PLAY" position:

1. Motor shaft presses against Drive Idler causing Flywheel to rotate.
2. Pinch Roller Presses against Capstan.
3. Both brakes disengage from Reel Tables.
4. Rewind Pulley disengages from Drive Idler.
5. Takeup Belt rubs against Takeup Reel Table Pulley, causing Takeup Reel Table to take up tape at constant speed.

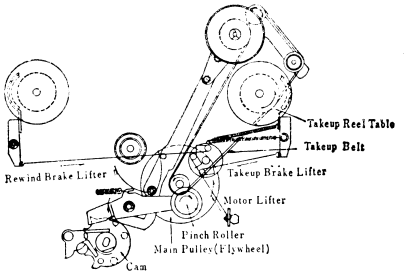


Fig. 2

When Function Lever is turned to "RECORD" position, (while pressing the "REC" button to right) the amplifier is in "RECORD" mode. Takeup torque varies according to weight of tape taken up on Takeup Table, and is always constant. Slight back tension to tape is supplied by friction of rewind drive mechanism linkage.

Fast Forward (Refer to Fig. 3)

When "FAST FORWARD" push button is depressed (after first turning function lever to "PLAY"),

1. Pinch Roller Lever is pushed forward due to pressure from F.F. Lever arm, which causes Pinch Roller to engage from Capstan.
2. F.F. Roller engages Takeup Reel Table causing Takeup Reel Table to rotate rapidly.

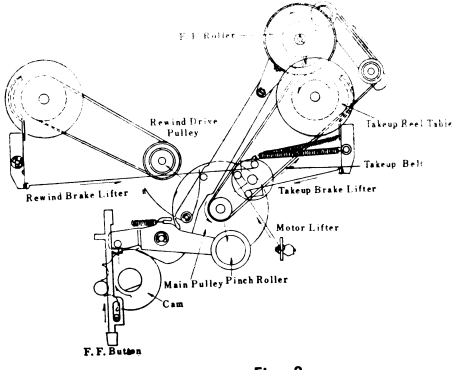


Fig. 3

Rewind (Refer to Fig. 4)

When Function Lever is turned to "REWIND":

1. Motor shaft presses against Drive Idler causing Flywheel to rotate.
2. Both brakes disengage from Reel Tables.
3. Rewind Pulley starts rotating. Takeup Reel Table starts to rotate rapidly.

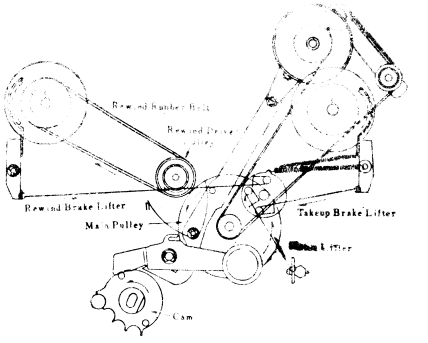


Fig. 4

Stop (Refer to Fig. 5)

When Function Lever is returned to "STOP" from "PLAY" or "RECORD" positions:

1. Motor and electrical circuit are cut off.
2. Motor shaft disengages from Drive Idler.
3. Brake are applied to both Reel Tables.
4. Pinch Roller disengages from Capstan.
5. F.F. Roller or Takeup Belt disengages from Takeup Table, and simultaneously Rewind Pulley presses against drive idler and stops tape motion.

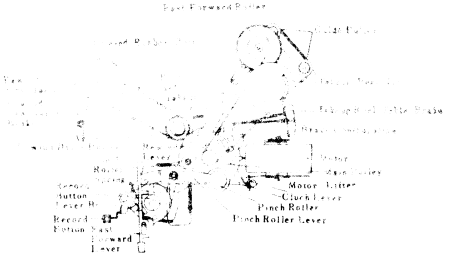


Fig. 5

When function lever is returned to "STOP" from "REWIND" positions:

1. Motor stops.
2. Motor shaft disengages from drive idler; simultaneously brakes applied to both reel tables stop rewind motion.